

US005971751A

Patent Number:

[11]

# United States Patent [19]

Lee [45] Date of Patent:

5,971,751 Oct. 26, 1999

[54] SAFETY APPARATUS OF A PIEZOELECTRIC LIGHTER

[75] Inventor: Thomas Ping Hua Lee, Industry, Calif.

[73] Assignee: Chun Ching Yeh, Covina, Calif.

[21] Appl. No.: 08/881,964

[22] Filed: Jun. 5, 1997

[51] Int. Cl.<sup>6</sup> ...... F23Q 7/12; F23D 11/36

[52] U.S. Cl. ...... 431/255; 431/153; 431/256

406, 11

## [56] References Cited

#### U.S. PATENT DOCUMENTS

| 3,493,313 | 2/1970  | Schlamp         | 431/255 |
|-----------|---------|-----------------|---------|
| 3,826,952 | 7/1974  | Iwasaki et al   | 431/255 |
| 3,984,738 | 10/1976 | Mohr            | 431/255 |
| 4,471,404 | 9/1984  | Nitta           | 431/255 |
| 4,786,248 | 11/1988 | Nitta           | 431/255 |
| 4,810,187 | 3/1989  | Nitta           | 431/255 |
| 4,859,172 | 8/1989  | Nitta           | 431/255 |
| 4,859,174 | 8/1989  | Zellweger et al | 431/255 |
| 5,104,313 | 4/1992  | Zellweger       | 431/277 |
| 5,120,215 | 6/1992  | Nollas          | 431/153 |
| 5,178,532 | 1/1993  | Frigiere        | 431/255 |
| 5,197,870 | 3/1993  | Yang            | 431/153 |
| 5,228,849 | 7/1993  | Frigiere        | 431/255 |
| 5,240,408 | 8/1993  | Kenjiro et al   | 431/153 |
| 5,334,011 | 8/1994  | Frigiere        | 431/153 |
|           |         |                 |         |

| 5,350,294 | 9/1994  | Iwahori         | 431/153 |
|-----------|---------|-----------------|---------|
| 5,368,473 | 11/1994 | Kenjiro et al   | 431/153 |
| 5,427,522 | 6/1995  | McDonough et al | 431/153 |
| 5,460,520 | 10/1995 | Lin             | 431/255 |
| 5,462,432 | 10/1995 | Kim             | 431/153 |
| 5,472,338 | 12/1995 | Ansquer         | 431/153 |
| 5,558,514 | 9/1996  | Ansquer         | 431/153 |
| 5,584,682 | 12/1996 | McDonough et al | 431/153 |
| 5,704,776 | 1/1998  | Sher            | 431/153 |

Primary Examiner—Ira S. Lazarus
Assistant Examiner—David Lee

Attorney, Agent, or Firm—David and Raymond; Raymond Y. Chan

### [57] ABSTRACT

A safety apparatus of a piezoelectric lighter includes a pressure absorbing device disposed in a cap cavity of a casing of the piezoelectric lighter, a holding means integrally affixed to an interior surface of a thumb-push cap for rigidly holding one end of the pressure absorbing device in position, and a receiving means provided in the cap cavity for receiving and supporting another end of the pressure absorbing device in position. Therefore the pressure absorbing device is vertically held between the thumb-push cap and the ceiling of the casing for urging the thumb-push cap at an upper normal position thereof and providing an additional press resistance to the thumb-push cap, so as to resist a downwardly press force applied by an under age child on the thumb-push cap while an adult is capable of pushing down the thumb-push cap easily.

# 6 Claims, 4 Drawing Sheets

